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Summer 8-22-2016

# Computer Self-efficacy and Perceived ease-of-use of Personal Digital Assistants for Academic activities by Undergraduates in University of Ibadan

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ikegune, daniel olusegun and Abiola, Awujoola Olalekan, "Computer Self-efficacy and Perceived ease-of-use of Personal Digital Assistants for Academic activities by Undergraduates in University of Ibadan" (2016). *Library Philosophy and Practice (e-journal)*. 1457. <http://digitalcommons.unl.edu/libphilprac/1457>

# **Computer Self-efficacy and Perceived ease-of-use of Personal Digital Assistants for Academic activities by Undergraduates in University of Ibadan**

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## **Abstract**

**This study investigates computer self-efficacy and perceived ease-of- use of personal digital assistants for academic activities by undergraduates in University of Ibadan. Relevant literature on academic activities of undergraduates, undergraduates Computer Self-efficacy, perceived ease-of-use of personal digital assistant and the challenges faced by undergraduates in the use of Personal Digital Assistant was reviewed. The descriptive survey research design of expo-factor was adopted for this study. The study population was determined using 2% of all the registered students in the university using stratified method. A total of 244 questionnaires were distributed, out of which 223 were returned and found valid. Data collected through the questionnaire, were analyzed using descriptive statistical techniques, frequency counts and percentages. The study provides answers to five research questions posed. The result of the study revealed that the undergraduate students had high level of computer self-efficacy in the use of PDAs. It was revealed that the students can easily use PDA for learning. The study revealed that Android phones and Blackberry phones were the commonly used PDAs by students. It was also revealed that the major academic activities they use PDAs is for their projects, assignments and classwork. The study also revealed the barriers of using the PDAs by the undergraduates to**

be battery life power outages, accidental loss of data or damage of equipment and others. Based on these findings, the following were recommended: Organise workshop where undergraduates will undergo training at the point when they are newly admitted into the University so that they can acquire computer skills and develop high computer self-efficacy. There should be constant power supply within the university so that students could power their PDAs information technology devices in order to avoid accidental loss of data or damage of equipment and to maximally use PDAs to enhance their academic activities.

**Key Words:** Computer self-efficacy, perceived ease-of- use of personal digital assistants, undergraduates academic activities, university undergraduates, University of Ibadan.

**Word count: 299**

## **Introduction**

The role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy (Rosen and Well, 1995; Thierer, 2000). Most experts in the field of education agreed that, when properly used, information technology hold great promise to improve teaching and learning in addition to shaping workforce opportunities. Poole (1996) has indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip schools with computer facilities and qualified personal necessary to produce technologically proficient and efficient students in developed countries of the world. There is no doubt that technology aided devices i.e Personal Digital Assistants (PDAs) can aid the instructional process and facilitate students' learning. Many studies have found positive effect associated with technology aided instruction (Burnett, 1994; Fitzgerald and Warner, 1996).

Borrowing from the word "Knowledge-driven world" as conceived by (Hawkins, 2004; Inwent, 2004), it means that education reform practices should focus on equal access and quality of education which should highlight the importance of change in the education sector through use of ITs and equipping new generations with enhanced skills to operate in the 21st century. IT has become an important part of the majority of organizations and businesses in order to maintain a competitive edge. Since IT has to be accepted and used successfully by its intended users, research stream on investigating issues related to the attitude toward IT has become one of

the most creative, and also claimed to be one of the most mature research areas (Venkatesh, Morris, Davis, & Davis, 2003). Educational institutions should be highly computerized, and all students should be able to use the technology to enhance their learning and research methods (Key Data on Information Technology in Schools in Europe, 2004). Education however, has greatly been influence by the use of Personal Digital Assistants (PDAs) by students.

Personal Digital Assistant (PDA) also known as smart phones are hand-held computers which can perform a wide variety of functions including access to the internet, scheduler, task list, phone-book, reference storage, camera, and telephone. In the educational arena, PDAs have been used by various users including students (Viken, 2009). PDA is a device that provides personalized assistance that helps in students' academic activities. PDAs offer many useful functions in order to help student access information resources personally for better outcomes. Students can download required software from the Internet. There are over thousands of software that can be downloaded. Some software is freeware and some only charge a small amount of fees. Different kinds of software can help do different kinds of work. There are agenda that can divide work into different categories (Andrew and Faithe, 2011).

PDAs are electronic organizers but do not need to handle bloated spreadsheets, databases, or text documents. Few users need to keep that much power in their pockets Instead, PDAs simply assist in organizing user's lives. More so, they are called "personal digital assistants" and not computers. Their main function is to make information highly accessible to users (Kahney, 2002). This highly specified objective allows for small, fast, and cheap components without any bells or whistles. Their architecture can handle third-party software and hardware. An example of a simple PDA is the iPod. For a PDA to be successful, it must be robust and powerful.

Examples of Personal Digital Assistant includes Windows phone, Java phones, I phones, Palmtop, Blackberry, Android phones, Symbian, I pod, Tablet PC, I pad, Acer N Series, Alpha Smart, Apple Newton, Dell, Abacus PDA Watch. PDAs afford a number of potentially useful activities and interventions. For instance, data are efficiently recorded and analyzed using PDAs as compared to using pen and paper. Portable and lightweight handhelds can be carried in pockets or purses into almost all environments of learning or research. In comparison to desktop computers, PDAs offer improved portability, accessibility (low cost), mobility and adaptability

(Ray, et al. 2010). PDAs are proving to be valuable tools in arts and science (Ostler, 2002). Software can provide for specialized mathematical programs. PDAs can be connected to peripheral tools and input devices.

Students now have the best libraries, museums and multimedia instruction at their fingertips through the PDAs that enabled global internet use. According to Ally (2009), the use of wireless, mobile, portable and handheld smart devices is gradually increasing and diversified across different sectors of education, both in developed and developing countries, some mobile learning is advocated to be defined and theorized in terms of Personal digital assistants, others are defined in terms of learners' mobility, mobility in learning and, lastly in terms of the learners' experience of learning using a smart device. Undergraduates are however influenced by some factors to either use or reject the use of a technology. One of such factors is the perceived-ease-of-use of the device or technology.

Perceived ease-of-use of Information and Communication Technology (ICT) is a factor that influences the adoption and use of information technology or information and communication devices. Ease-of-use of information and communication technology is the extent to which the electronic device or personal digital assistants can be used without constraints or with little constraints. Davis (1989) conceived perceived ease-of-use as the degree to which a person believes that a particular system would be free of effort. This follows from the definition of "ease" i.e freedom from difficulty or great effort. Effort is a finite resource that a person may allocate to various activities for which he is responsible. All things being equal, an electronic device or information and communication device that is perceived to be easy to another may likely be accepted and use by users. Perceived usefulness and perceived ease-of-use are two conceptually independent constructs proposed by Technology Acceptance Model (TAM), to explain individual intention and readiness to use new technology. Perceived ease-of-use has to do with the extent to which an individual believes that using a particularly new technology or devices will be free of effort or stress. Another major factor that can influence the use of personal digital assistants by undergraduates is their level of self-efficacy in the use of personal digital assistants.

Some sort of cognitive and personal characteristics are required while using devices and information technology. Writing and editing, group process and web skills stand out among the cognitive abilities while self-regulation, integrity and openness stand out among the personal characteristics (West and West, 2009). Besides all these variables above, computer self-efficacy is one of the most significant of all which enables these tools to be used. Bandura (1977) as cited by Horzum and Aydemir (2013) says self-efficacy is the capability belief towards the actions those are required in managing and editing lessons which brings skills. Measuring self-efficacy presents us the information about how people think, feel, behave and motivate themselves. Bandura (1986) as cited by Shu, Tu and Wang (2011) defined self-efficacy as people's judgment of their capabilities to organise and execute courses of action required to attain designated types of performances, which is concerned not with the skills one has but with judgment of what one can do with whatever skills one possesses.

The role and usefulness of personal digital assistants to academic pursuit and activities of undergraduates cannot be underestimated. The undergraduate students already appreciate and use a variety of personal digital assistants on daily basis, they may however not be using them maximally or may even perceived their use as not easy and difficult, this may be as a result of the fast rate at which these devices get obsolete but however, the use of personal digital assistants should be encouraged. Undergraduates must therefore improve on their personal digital assistants self-efficacy and have a better perception on the ease of use of the device.

## **1.2 Statement of the problem**

Personal Digital Assistants enable undergraduates to maximize their access to information materials needed for their academic activities. These PDAs include Windows phone, Java phones, I phones, Palmtop, Blackberry, Android phones, Symbian, I pod, Tablet PC, I pad, Acer N Series, Alpha Smart, Apple Newton, Dell, Abacus PDA Watch etc. have greatly improve academic activities of undergraduates.

However, despite the opportunities presented by PDAs to enhance academic activities of undergraduates, it has been observed by the researcher that some undergraduates though have these PDA devices but do not use the PDAs optimally for their academic activities as majority of the undergraduates just use the PDAs for social interactions alone. Many even do not use the PDAs because they believe the PDAs are too difficult to operate. Hence, they run from one cyber

café to another, using the traditional library resources and looking for those they believe could operate the PDAs to help them on their academic activities. These mentioned challenges may stream up from the low self-efficacy on use of Personal digital assistants and their poor perception on the ease-of-use of personal digital assistants.

### **Objectives to the study**

The objectives of the study are to:

1. determine the computer self-efficacy of undergraduate students on the use of PDAs in University of Ibadan, Nigeria;
2. ascertain the perceived ease-of-use of PDAs by undergraduates in University of Ibadan, Nigeria;
3. find out the various PDAs commonly used by undergraduates for their academic activities;
4. find out the academic activities carried out with PDAs by undergraduates in University of Ibadan, Nigeria;
5. find out barriers hindering the use of PDAs by undergraduates in University of Ibadan, Nigeria.

### **Research questions**

The following research questions where drawn to guide the study

1. What is the computer self-efficacy of undergraduates on the use of PDAs in University of Ibadan, Nigeria?
2. What is the perceived ease-of-use of PDAs by undergraduates in University of Ibadan, Nigeria?
3. What are the various PDAs commonly used by undergraduates for their academic activities in University of Ibadan, Nigeria?
4. What are the academic activities carried out with PDAs by undergraduates in University of Ibadan, Nigeria?
5. What are the barriers hindering the use of PDA by undergraduates in University of Ibadan, Nigeria?

### **Significance of the study**

The findings of this study will be of utmost significance to the undergraduates as their attention will be drawn to the fact that their PDAs can indeed be useful for academic activities. This knowledge will assist them to use these devices to access information resources that will enhance their learning and research. The lecturers will also benefit from the results of the study as the level of usage of PDAs use for academic activities by the undergraduates could reveal a deficiency in the use. This could motivate the lecturers to encourage the use of PDA for academic activities by giving assignments and term papers that will require the undergraduates to utilize these devices for academic activities.

This study will contribute largely to the literature and fill the gap in the use of personal digital assistant in the academic environment among undergraduates in Nigeria. To date, the university administrators, lecturers, and the society at large have not fully enjoyed the benefits of undergraduates using PDAs to enhance learning beyond the conventional teaching methods.

## **LITERATURE REVIEW**

### **Overview of Personal Digital Assistant in Education**

Personal Digital Assistant (PDA) is a small, mobile computing device providing services tailored to people "on the go" (Viken, 2011). PDAs are versatile information processing appliances. They are used frequently as personal information managers (PIMs) to record telephone numbers, addresses, appointments, and to-do lists. Also, PDAs can synchronize with microcomputers to transfer e-mail, text documents, spreadsheets, files, or databases. Other types of PDAs incorporate an integrated modem to connect with the Internet or to dial-up another computer in order to transfer data (Gascho and Griggs, 2010).

Personal digital assistants are of great benefit and importance to education. Fulfillment of educational purposes is a major benefit of smart phones (PDA). Through Internet research, smart phone (PDA) users have the potential to improve their education. Starting at the primary level and proceeding to the secondary level, smart phones (PDA) are being used as educational tools. Due to the "availability of the Internet and high speed mobile browsing," the smart phone (PDA) offers an alternate channel for delivery of academic assistance (Sarwar and Tariq, 2013).



Kahney (2002) provided that in 1993 Apple Computer introduced the first PDA, which was called the Newton Message Pad. Rather than just storing handwritten words, Newton converted them into typescript. Early versions of Newton had limited success with this difficult process. Three years later, 3Com's Palm Computing introduced the revolutionary Palm Pilot. In June 1998, Microsoft began shipping a scaled down Windows operating system for manufacturers of palm-sized PCs. Apple's Newton was later taken off the market.

Patrick (2006) stated that two of the leading manufacturers of PDAs are Palm, Inc. and Casio, Inc. PDAs made by Palm dominate the market with two popular models: the Palm m100 and the Palm VIIx. Both devices use the Palm OS 3.5 as an operating system, HotSync Manager 2.1.0, Pocket Mirror 2.0.7 as synchronizing software, and a 20-MHz Motorola Dragon Ball EZ as a processor. The Palm OS is fast, simple, and compatible with both Macintosh and Windows-based computers.

The amount of memory available in these devices is important, especially the amount of RAM. The Palm m100 has 2MB of RAM and 2MB of ROM. The Palm VIIx has more RAM (8MB) and the same amount of read only memory (ROM). Both use a touch screen as their input and have a speaker as well as an infrared port. To exchange data between Palm PDAs, users can beam information from one to another using an infrared port. Users also can place the Palm PDA into a docking cradle and synchronize their PDA with their microcomputers. The Palm VIIx has a docking serial cradle for synchronizing with a microcomputer and a built-in modem that can access the Internet or other networks without wires (Borrelli, 2007).

A sampling of current projects at academic institutions is provided in the (Horizon Report, 2010). According to the Education Center for Applied Research (ECAR, 2010) study, most undergraduates consider themselves mainstream adopters of technology. Skills are increasing and the technological landscape is changing quickly. PDAs may one day go the way of the eight-track tape as laptops, notebooks, smart phones and other portable devices enable students to access their content from anywhere. They may or may not be aware of it, but many of today's undergraduates are already cloud-savvy information consumers, and higher education is slowly but surely following their lead.

Moreover, Two Technologies, Inc. (2015) stated that today's PDAs like Java phone, Window phone, Iphone, Ipad, iPod, Tablet PC, Palmtop, Blackberry, Android phones, allow undergraduates organize their schedule, take notes, do math calculations, play games, write memos, and even surf the Internet and send e-mail.

### **Academic activities of undergraduates**

There are various academic activities undergraduates are involved in. Some of the academic activities are class work, projects, seminars, lectures, term papers, assignments, examinations and practical's e.t.c. One of the major academic activities undergraduates participate in school is class work. Class work is an assimilation and understanding pattern of learning activities, either within or after the lecture. Similarly, Reynolds, Powell, Miele, Brodler and MacDonald (2007) in their study on effectiveness of class work in schools added that class work is simply Schoolwork that is done in class.

Furthermore, another academic activity undergraduates participate in is assignment. Michael and Allport (2005) in their study on efficient modes of teaching in schools, in UK reported that assignment is a task given to students by their teachers to be completed out of the class time. Jossey-Bass (2000) expressed that there has been much debate as to whether or not assignment actually improves student learning. Commonly cited disadvantages of assignment include: placing students in a passive (rather than active) role, encouraging multiple- way communication, requiring significant out-of-class time for students to engage with the material, and requiring the students to possess effective research skills.

Also, undergraduates attend seminars as an academic activity. A seminar is a conference or other meeting for discussion or training, or a small group of students at university, meeting to discuss topics with a teacher. Research conduct by Edwards and Burson (2008) on participant's recipient to innovations introduced at seminars stated that some of the workshops participants show that the relevant information received do expand their knowledge. Similarly too, undergraduates have been appreciative and opt-in to receive informative and relevant seminar, that help develop their learning ability with a full clarity of understanding. Adamson, (2006) report on the University of Nottingham's "JISC e-Portfolio Reference Model Project Technology and Evaluation Seminar" in UK, showed that it is interesting to note how the efficient seminar presentation is in academic institutions with developments in mobile learning in educational

system, for instance, the free-flowing ideas from which to create a learning pattern in academics. Undergraduates find this system sufficiently useful in the academic activities.

Another major academic activity carried out by undergraduates is project. A project is a piece of research work done by a student carefully planned to achieve an academic award. Is the apex of academic activities which is designed to demonstrate the range of learning activities that have been embedded and internalize by a student through the years in institutions. Similarly, Horizon (2009) study on project carried out at tertiary institutions in Australia, report notes that at school, educational institute and university, a project is a research assignment given to a student which generally requires a larger amount of effort and more independent work than is involved in a normal essay assignment.

### **Undergraduates Computer Self-efficacy**

Bandura (1986) as cited by Shu, Tu and Wang (2011) defined self-efficacy as people's judgment of their capabilities to organise and execute courses of action required to attain designated types of performances, which is concerned not with the skills one has but with judgment of what one can do with whatever skills one possesses. Self-efficacy is a dynamic construct that changes as new information and experiences are acquired (Saade and Kira, 2009). Lunenburg (2011), citing Bandura (1997) has identified four principal sources of self-efficacy: past performance, Vicarious experience, verbal persuasion, and emotional cues.

Self-efficacy is derived from the social cognitive theory (SCT). SCT accounts for the role of self-regulatory, self-reflective, cognitive, and vicarious processes in human behavioral adaptation (Azevedo and Moos, 2009). Azevedo and Moos (2009) affirm that central to this underlying assumption is Bandura's conception of reciprocal determination, which suggests that human functioning, is a dynamic interplay between environmental, behavioural, and personal influence. This dynamic interaction, termed triadic reciprocity, helps explain how individuals acquire and maintain certain behavioural patterns. Research has shown that different media forms do indeed help to foster and develop different cognitive skills. For instance, several experimental studies have shown that repeated computer game playing enhances selected attentional, iconic and spatial representational skills (Subrahmanyam, Michikyan, Clemmons, Carrillo, Uhls and Greenfield, 2013).

In many of the researches carried out (Claggett and Goodhue, 2011; Azevedo and Moos, 2009; Barbeite and Weiss, 2004) it is clear that students who felt more efficacious for problem solving demonstrated higher performance level when compared with peers with lower self-efficacy, despite the fact that all of the students had equal ability. Saade and Kira (2009) observed that there is a strong positive relationship between self-efficacy and performance in various academic activities. Claggett and Goodhue (2011) stated that some people jump at computers and new information systems solutions enthusiastically, where others seem unnaturally resistant and convinced of their failures before beginning. This difference is what Compeau and Higgins (1995) described as computer self-efficacy, which is often independent of whether or not the individuals have the skills and abilities to perform particular tasks with computer or computer devices.

Claggett and Goodhue (2011) identified two measures of self-efficacy and tried to explain the difference between them. First, the Bandura's self-efficacy which emphasise the generative capacities of self-efficacy as distinct from skill capabilities; and second is Gist's self-efficacy which seems to emphasise self-assessment of skills. Bandura's self-efficacy construct focuses on a motivational factor that generate performance above and beyond any summation of relevant skills, by influencing emotional reactions, thought patterns, and the use of skills. Isolating this motivational factor would add new information to our understanding about system use (Claggett and Goodhue, 2011).

### **Perceived ease-of-use of Personal Digital Assistant**

Bandura (1982) showed the importance of considering both perceived ease-of-use and perceived usefulness in predicting behavior. He suggested that in any given instance, behavior would be best predicted by both, self-efficacy and, outcome judgments. Self-efficacy, which was similar to perceived ease-of-use, was defined as judgment of how well one can execute courses of action required to deal with prospective situations, whereas outcome judgment, which is similar to perceived usefulness, was defined as the extent to which a behavior once successfully executed is believed to be linked to valued outcomes.

Similarly, Swanson (1982) provided evidence that perceived ease-of-use and perceived usefulness were both important behavioural determinants. Swanson hypothesized that potential

users will select and use information based on the ease they feel to access those information, also, between information quality and associated cost of access. Davis (1985) concluded that people tend to use or not to use a system to the extent that they believe it will help them perform their job better (perceived usefulness), and also that the beliefs of the effort required to use a system can directly affect system usage behavior (perceived ease-of-use). More formally, Davis (1985) defined perceived usefulness and perceived ease-of-use as: Perceived usefulness is the degree to which an individual believes that the using of a particular system would enhance his/her job performance. While Perceived ease-of-use is the degree to which an individual believes that using a system would be free of physical and mental efforts.

### **Challenges faced by undergraduates in the use of Personal Digital Assistant**

Tegang, et al, (2007) reported that emerging information technology has provided several challenges in using PDAs for academic activities. Among the most important is Low academic performances. The findings showed the negative use of the PDAs could result to negative outcome. Also stated, APAHIA, (2007) that PDAs are more expensive, and it is really a challenge to undergraduates that want to fill the experienced of procuring one. Notwithstanding, challenges in the use PDAs cannot guarantee the user the final end to their academic activities, speedy data collection, completeness of information, and most importantly, high academic performance (Tegang, 2007).

Van Den, et.al (2003) experiment showed that the use of PDAs revealed several challenges, including power outages, slow downloading in database format, accidental loss of data or damage of equipment, and security of PDAs. However, quality of data from PDAs was better and more quickly available for analysis than from paper questionnaires. Using PDAs was more expensive, but startup costs could be reduced over time as rental or purchase fees are spread among many surveys or other uses. In Rimmer (2005) study, significant differences in managing PDA and paper questionnaire by data collection teams were identified. Main lessons were the need to design relational databases ahead of time, download data in text format, develop or adapt manuals and standard operating procedures for data management, procure suffice bent supplies of back-up batteries and accessories, and strengthen technical skills of the data collectors. However, if all the challenges are addressed, the interest of PDAs will be well appreciated among the undergraduates of University of Ibadan.

## **METHODOLOGY**

The research design adopted for this study was descriptive survey research which includes the causal-comparative (Ex-post-Facto) method of research. Survey research design entailed gathering relevant data from the sample to the entire population. The Ex-post-facto research design is a systematic empirical inquiry in which the researcher does not have direct control of the independent variables because their manifestation has already occurred or because they are inherent not manipulated. The respondents were undergraduates of the University of Ibadan. The total population of this study is 12,173 undergraduates of the University of Ibadan drawn from all the thirteen faculties in the University of Ibadan. These faculties are Agriculture, Arts, Basic Medical Sciences, Clinical Sciences, Dentistry, Education, Law, Pharmacy, Public Health, Sciences, Technology, the Social Sciences and Veterinary. The study population was determined using 2% of all the registered students in the university using stratified method. A total of 244 questionnaires were distributed, out of which 223 were returned. There were, however, some missing data points due to few unanswered questions by respondents. The questionnaire was divided into six sections, A, B, C, D, E and F. Section “A” collected information on demographic data of undergraduates, “B” sought information on PDAs self-efficacy of undergraduates, Section “C” sought information on perceived ease-of-use of PDAs by undergraduates, Section “D” investigated information on the various PDAs commonly used by undergraduates. Section “E” found out the academic activities done on PDAs by undergraduates. While, Section “F” asked questions on the barriers to use of PDAs by undergraduates. The reliability coefficient for the instruments was tested to be 0.84 using Cronbach-Alpha method. The questionnaire was pre tested on undergraduates of the Obafemi Awolowo University that was not included in the study. The data collected for this study were analyzed using the descriptive statistics measures such as: simple percentage, frequencies and table run on the computer, using the Statistical Package for the Social Science (SPSS).

## **DATA ANALYSIS**

Data were analysed as they related to the specific areas of the study using descriptive statistics such as simple percentages, tables and frequency distributions.

### **Demographic Information of the Respondents**

**Table 4.01: Demographic characteristics of respondents**

<b>Variables</b>	<b>University of Ibadan</b>	<b>Percentage (%)</b>
<b>Faculty:</b>		
Agric	26	11.7
Arts	27	12.1
Basic Medical Science	4	1.8
Clinical Sciences	14	6.3
Dentistry	3	1.3
Education	30	13.5
Law	14	6.3
Pharmacy	8	3.6
Public health	3	1.3
Sciences	37	16.6
Technology	24	10.8
Social sciences	25	11.2
Veterinary	8	3.6
<b>Level:</b> 100	68	30.5
200	79	35.4
300	36	16.1
400	27	12.1
500	4	1.8
above 500	9	4.0
<b>Age:</b> 16-20	114	51.1
21-25	82	36.8
25-30	23	10.3
30-35	4	1.8
<b>Gender:</b> Male	102	45.7
Female	121	54.3

Table 4.01 revealed the demographic characteristics of the respondents. The distribution according to faculties of the respondents at the University of Ibadan showed that majority 37(16.6%) of respondents were from Faculty of Sciences, followed by Dentistry 30(13.5%) and Arts 27(12.1%). While Faculty of Basic Medicals Sciences and Public health were least represented giving a response rate of 4(1.8%) and 3(1.3%) respectively.

As regards the level of study of the respondents, majority of the respondents 79(35.4%) were in 200 level and 68(30.5%) were in 100 level. Those that were in 500 levels and above were few. The table further revealed that majority of the respondents was between 16-20 years category giving 114 (51.1%). This was followed by those who were between 21-25 age with 82

(36.8%). The respondents who were between the age range of 30-35 were few with the response of 4(1.8%). This means that the respondents were young and in their active years.

The findings also revealed that there were more females than males among the respondents of the University of Ibadan. Table 4.01 revealed that there were 121(54.3%) female respondents which were higher than 102(45.71%) male respondents in University of Ibadan.

## Research questions

### 4.2 Research Question 1: What is the computer self-efficacy of undergraduates on the use of PDAs in University of Ibadan, Nigeria?

**Table 4.02:** Level of computer self-efficacy of undergraduate students in the use of PDAs

	SA		A		D		SD		Mean	St. Dev
Statements	F	%	F	%	F	%	F	%		
I feel confident using PDAs	101	45.3	109	48.9	6	2.7	6	2.7	3.37	.673
I feel confident using PDAs even if I have never used it before.	76	99.6	107	48.0	33	14.8	6	2.7	3.14	.763
I feel confident using PDAs even if all I have is the manual as guide	74	33.2	115	51.6	27	12.1	7	3.1	3.15	.748
I feel confident using PDAs if I see someone else using it before I try it myself.	68	30.5	115	51.6	32	14.3	6	2.7	3.11	.743
I feel confident to download and save files on my PDAs	102	45.7	105	47.1	14	6.3	-	-	3.40	.607
I have the necessary knowledge to use the PDA devices	77	34.5	116	52.0	23	10.3	5	2.2	3.20	.711
I have control over using PDAs for academic activities	84	37.7	110	49.3	25	11.2	4	1.8	3.23	.715
I understands terms/words relating to PDAs use	72	32.3	122	54.7	23	10.3	3	1.3	3.20	.671
I can maneuver any PDAs I come in contact with	60	26.9	115	51.6	43	19.3	1	4	3.07	.697
I feel confident retrieving information from PDAs for my academic work	72	32.3	121	54.3	25	11.2	2	0.9	3.20	.664
I am confident at transferring information from my PDAs into computer systems.	88	39.5	109	48.9	21	9.4	2	0.9	3.29	.672



The scales for measuring the level of computer self-efficacy of the students in using PDAs are Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Mean and Standard deviation were also used to determine the level of personal digital assistants self-efficacy of undergraduates. Table 4.02 revealed that the undergraduate students of the University of Ibadan feel confident to download and save files on their PDAs with mean =3.40, followed by the fact that they feel confident using PDAs (mean=3.37) and transferring information from PDAs into their computer systems (mean=3.29). However, they had low level of computer self-efficacy in maneuvering any PDAs they come in contact with (mean =3.07).

#### **4.3 Research questions 2: What is the perceived ease-of-use of PDAs by undergraduates in University of Ibadan, Nigeria?**

**Table 4.03:** Undergraduates' perception of ease of use of PDAs

	SA		A		D		SD		Mean	St. Dev
Statements	F	%	F	%	F	%	F	%		
I can easily use PDA for learning	107	48.0	109	48.9	4	1.8	-	-	3.47	.535
I feel that using PDA makes my academic activities clear and understandable	90	40.4	118	52.9	10	4.5	1	0.4	3.36	.591
I feel that using PDA makes it easy for me to download electronic resources that enhance my academic activities	103	46.2	106	47.5	10	4.5	1	0.4	3.41	.602
I feel that using PDA makes interactions with my colleagues that centre in academic activities easy	87	39.0	117	52.5	13	5.8	3	1.3	3.31	.645
I feel I can easily share information with the use of PDA	95	42.6	106	47.5	17	7.6	2	0.9	3.34	.659
I need to consult the user manual often when am operating PDAs	47	21.1	63	28.3	88	39.5	20	9.0	2.63	.923
I find it hard to use PDAs to do my academic work	30	13.5	67	30.0	88	29.5	34	15.2	2.42	.912

PDAs often behave in unexpected ways	39	17.5	98	43.9	68	30.5	9	4.0	2.78	.789
Interacting and using PDAs requires a lots of mental effort	49	22.0	91	40.8	71	31.8	8	3.6	2.83	.817
I make errors often when using PDAs	29	13.0	70	31.4	99	44.4	22	9.9	2.48	.847

Table 4.03 above revealed the perception of ease of using personal digital assistants by the undergraduate students of the University of Ibadan. As showed in the table, the respondents indicated that they can easily use PDAs for learning with mean=3.47, followed by their perception that using PDAs makes it easy for them to download electronic resources that enhance their academic activities (Mean=3.41); and that using PDAs make their academic activities clear and understandable (Mean=3.36). However, their perception that they find it hard to use PDAs to do their academic works (Mean=2.42) and that they make errors often when using PDAs (Mean=2.48) were the least. This implies that majority of the respondents perceived PDAs to be easy to use.

#### **4.4 Research questions 3: What are the various PDAs commonly used by undergraduates for their academic activities in University of Ibadan, Nigeria?**

**Table 4.04:** PDAs commonly used by undergraduates

	MCU		CU		RU		NU		Mean	St. Dev
Statements	F	%	F	%	F	%	F	%		
Windows phone	54	24.2	100	44.8	57	25.6	5	2.2	2.94	.778
Java phones	50	22.4	80	35.9	68	30.5	17	7.6	2.76	.900
I phone	73	32.7	84	37.7	55	24.7	5	2.2	3.04	.827
Palmtop	52	23.3	75	33.6	79	35.4	9	4.0	2.79	.858
Blackberry	115	51.6	84	37.7	15	6.7	3	1.3	3.43	.685
Android phones	171	76.7	35	15.7	8	3.6	4	1.8	3.71	.625
Symbian phones	36	16.1	49	22.0	97	43.5	36	16.1	2.39	.950
I pod/non-ipod	44	19.7	81	36.3	72	32.3	24	10.8	2.66	.919
Tablet PC	79	35.4	116	52.0	22	9.9	4	1.8	3.22	.695
I pad	93	41.7	93	41.7	30	13.5	5	2.2	3.24	.770

Table 4.04 revealed the types of personal digital assistants (PDAs) commonly used by the undergraduate students of the University of Ibadan. As showed on Table 4.04, the respondents indicated that Android phones with a mean value of (Mean=3.71) and Blackberry phones (Mean=3.71) were the commonly used PDAs. Symbian phones 97(43.5%) and Ipod/Non-Ipod 72(32.3%) were rarely used. This shows that Android and Blackberry phones and devices are the favorites of undergraduate students among the various personal digital assistants.

#### **4.5 Research questions 4: What are the academic activities done on PDAs by undergraduates in University of Ibadan, Nigeria?**

**Table 4.05:** Academic activities carried out with PDAs

	SA		A		D		SD		Mean	St. Dev
Activities	F	%	F	%	F	%	F	%		
Class work	95	42.6	98	43.9	26	11.7	2	0.9	3.29	.707
Projects	119	53.4	96	43.0	6	2.7	1	0.4	3.50	.577
Seminars	89	39.9	103	46.2	25	11.2	3	1.3	3.26	.711
Lectures	78	35.0	114	51.1	23	10.3	6	2.7	3.19	.728
Term papers	74	33.2	108	48.4	33	14.8	5	2.2	3.14	.748
Assignments	107	48.0	93	41.7	15	6.7	5	2.2	3.37	.713
Examinations	62	27.8	70	31.4	63	28.3	27	12.1	2.75	.996
Practical's	57	25.6	102	45.7	46	20.6	14	6.3	2.92	.850

Table 4.05 revealed the academic activities being carried out with the use of PDAs by the undergraduate students of the University of Ibadan. They indicated that the major academic activities they use PDAs for is for their projects with mean=3.50, followed by assignments (Mean=3.37) and class work (Mean=3.29). They however indicated that they seldom use PDAs for examinations (Mean=2.75) and practical's (Mean=2.92). This implies that undergraduate students of the University of Ibadan use PDAs in getting scholarly information needed to write their project and assignments given to them and not necessarily for examinations.

#### 4.6 Research questions 5: What are the barriers hindering the use of PDA by undergraduates in University of Ibadan, Nigeria?

**Table 4.06:** Barriers hindering the use of PDAs by undergraduate of U.I

	SA		A		D		SD		Mean	St. Dev
Statements	F	%	F	%	F	%	F	%		
Battery life power outages	132	59.2	73	32.7	12	5.4	5	2.2	3.50	.704
Small size screen	57	25.6	101	45.3	52	23.3	12	5.4	2.91	.838
Slow speed	64	28.7	104	46.6	46	20.6	7	3.1	3.02	.792
Limited memory	57	25.6	102	45.7	57	25.6	5	2.2	2.95	.779
Costly and more expensive for students	82	36.8	88	39.5	39	17.5	12	5.4	3.09	.872
Technical difficulty	47	21.1	112	50.2	51	22.9	11	4.9	2.88	.795
Insufficient bandwidth	57	25.6	94	42.2	63	28.3	6	2.7	2.92	.807
Poor quality of software	44	19.7	94	42.2	75	33.6	8	3.6	2.79	.801
Lack of training	62	27.8	74	33.2	74	33.2	9	4.0	2.86	.878
Small size of phone keyboard	45	20.2	94	42.2	67	30.0	13	5.8	2.78	.839
Prefer pen and paper	50	22.4	75	33.6	72	32.3	20	9.0	2.71	.924
Slow data entry and slow downloading in database format	67	30.0	113	50.7	29	13.0	12	5.4	3.06	.807
Accidental loss of data or damage of equipment	90	40.4	99	44.4	26	11.7	3	1.3	3.27	.720
Poor data entry interface	65	29.1	102	45.7	50	22.4	4	1.8	3.03	.771
Privacy concern	72	32.3	96	43.0	37	16.6	12	5.4	3.05	.851
Device too delicate	65	29.1	100	44.8	49	22.0	6	2.7	3.02	.794
Lack of support for PDAs security/Services/Warranty	64	28.7	105	47.1	47	21.1	3	1.3	3.05	.749
Poor vision	54	24.2	95	42.6	54	24.2	17	7.6	2.85	.883

Table 4.06 revealed the barriers hindering the use of PDAs by undergraduate of University of Ibadan. The major barriers to their use of PDAs as indicated in the table are battery life power outages (Mean=3.50), followed by accidental loss of data or damage of equipment (Mean=3.27) and that PDAs are costly and more expensive for students with mean=3.09.

However, the least barriers that hinder their use of PDA were that they prefer pen and paper (Mean=2.71) and small size of phone keyboard (Mean=2.78).

### **Discussion of findings**

The findings of the study revealed the level of computer self-efficacy of undergraduate students of the University of Ibadan. It was revealed in the study that the undergraduate students had high level of computer self-efficacy in the use of PDAs, as they indicated that they feel confident to download and save files on their PDAs and that they feel confident using PDAs. They also indicated that could transfer information from PDAs into their computer systems. This means that they are ICT savvy and they are conversant with the use of smart devices. This corroborates the findings of Saade and Kira (2009) who observed that there is a strong positive relationship between self-efficacy and performance in using smart devices. Claggett and Goodhue (2011) also stated that some people jump at computers and new information systems solutions enthusiastically.

The study also revealed the perception of ease of using personal digital assistants (PDAs) by the undergraduate students of the University of Ibadan. As revealed in the study, the respondents indicated that they can easily use PDA for learning. They also perceived that that using PDA makes it easy for them to download electronic resources that enhance their academic activities and that using PDA makes their academic activities clear and understandable. This implies that majority of the respondents perceived PDAs to be easy to use and this perhaps is the reason why they use them for academic activities and other purposes in the course of their study in the university. This finding is in support to the submission of Davis (1985) that people tend to use a system to the extent that they believe the effort required to use a system is easy and this can directly affect system usage behavior.

Furthermore, the study revealed the types of personal digital assistants (PDAs) commonly use. It was revealed that Android phones and Blackberry phones were the commonly used PDAs. However, Symbian phones and Ipod/Non-Ipod were rarely used. This shows the popularity and acceptability of Android and Blackberry phones among the undergraduate students of the University of Ibadan. This finding is consistent with the submission of Two Technologies, Inc. (2015) who stated that today's PDAs like include Java phone, Window phone, Iphone, Ipad,

iPod, Tablet PC, Palmtop, Blackberry and Android phones, and these devices allow students to manage their schedules and access information from the web and other information systems.

More so, the study revealed the academic activities being carried out with the use of PDAs by the undergraduate students. They indicated that the major academic activities they use PDAs for are their projects, assignments and classwork. They however indicated that they seldom use PDAs for examinations and practicals. This is in line with findings of Horizon (2009) study on project carried out at tertiary institutions in Australia and reported that at school, educational institute and university, a project is a research assignment given to a student which generally requires a larger amount of effort and more independent work than is involved in a normal essay assignment. Michael and Allport (2005) in their study on efficient modes of teaching in schools, in UK reported that assignment is a task given to students by their teachers to be completed out of the class time. Also, Reynolds, Powell, Miele, Brodler and MacDonald (2007) in their study on effectiveness of class work in schools added that class work is simply Schoolwork that is done in class.

The barriers hindering the use of PDAs by the undergraduates as revealed in the study are battery life power outages, accidental loss of data or damage of equipment; PDAs are costly and more expensive for students. The finding is in support with the study of Van Den, et.al (2003) report showed that the use of PDAs revealed several challenges, including power outages, slow downloading in database format, accidental loss of data or damage of equipment, and security of PDAs.

## **Conclusion**

Personal digital assistants (PDAs) are some of the information technology device that has gained acceptance among the undergraduate students. The use of PDAs by the undergraduate students has greatly influenced their academic activities. The study has been able to reveal that undergraduates of the University of Ibadan have high computer self-efficacy and this has positively affected their perception of ease of use of PDAs which has enhanced their use of PDAs for projects, assignment and other academic activities which has resulted to their proficiency in the use of personal digital assistants (PDAs) which mainly includes Android phones and Blackberry devices. However, due to battery life power outage and accidental loss of data, some PDAs were rarely used while some were not used by the undergraduate students. The

barriers hindering the use of PDAs by the undergraduates are battery life power outages, accidental loss of data or damage of equipment and that PDAs are costly and more expensive for students. Hence, it is imperative that PDAs manufacturing companies should increase the battery life power of PDAs that will be sold to undergraduates so that they could maximally use PDAs to enhance their academic activities.

## **Recommendations**

In view of the conclusion stated or drawn above, the following recommendations are put forward:

1. The management of the University of Ibadan should on admissions to the programme recommend the use of PDAs information technology devices such as Android phones, iPhone and iPad and other supportive technology devices for educational purpose however; this can be incorporated in their tuition fees.
2. The management of the University should organise workshop where undergraduates will undergo training at the point when they are newly admitted into the University so that they can acquire computer skills and develop high computer self-efficacy. This will positively affect their perceive ease-of-use of PDAs for projects, assignment and other academic activities.
3. The management of the University should ensure constant power supply within the university so that students could power their PDAs information technology devices in order to avoid accidental loss of data or damage of equipment and to maximally use PDAs to enhance their academic activities.

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